

## REMARKS/ARGUMENTS

Claims 1-23 are currently pending in the present patent application.

In Section 3 of the final Office Action mailed October 10, 2007, the Examiner objects to Figure 1 for failing to include a suitable label such as "--Prior Art--". A replacement sheet for Figure 1 including the label "--Prior Art--" accompanies this amendment.

In Section 4 of the final Office Action the Examiner maintains the rejection claims 1-23 under 35 U.S.C. § 101 as being directed to nonstatutory subject matter. Under Section 10 of the final Office Action the Examiner responds to the undersigned's prior arguments regarding this rejection and states that the "claims do not provide adequate support of how they would provide improved throughput" and reiterates the assertion that these "claims are merely directed to a method or system [of] computing [an] FFT/IFFT in parallel processing as general."

The recited method of claim 1 is directed to a method of controlling calculations by processing elements in a multiprocessor system to perform desired FFT/IFFT computations. The method is not directed to the FFT/IFFT computations or algorithm itself but to the method of controlling a multiprocessor system to perform such calculations. The recited method is sufficiently tied to a machine to recite a patent eligible subject matter, as expounded by the Supreme Court in *Diamond v. Diehr*, 450 U.S. 175 (1981). A process that includes particular machines is patent eligible subject matter. In the present case, claim 1 does not attempt to pre-empt use of the FFT/IFFT algorithm, but instead only seeks to foreclose others from controlling multiprocessors as recited in the other steps of the claim to execute this algorithm. Simply because the overall recited process includes an algorithm which, in and of itself is not patent eligible subject matter, does not render the overall process ineligible subject matter. Claim 1 expressly recites the use of machine components, namely the processing elements, and would be virtually impossible to carry out without these machine components.

For all these reasons, claims 1-23 recite patent eligible subject matter under Section 101. Moreover, claims 3 and 4 are allowable since, as note by the Examiner

in Section 10c of the final Office Action, these claims were not rejected over any prior art. Amended independent claim 5 is allowable for reasons similar to claim 4.

Finally, in Section 7 of the Office Action the Examiner maintains his rejections of claims 1-2, 5-6, 9-10, 16-17, and 20-23 under 35 U.S.C. § 102(b) as being anticipated by the paper entitled "Performance Analysis of FFT Algorithms on Multiprocessor Systems" to Laxmi *et al.* ("Laxmi"). In Sections 8 and 9 the Examiner maintains the rejections claims 11-13 under 35 U.S.C. § 103(a) as being obvious over Laxmi.

In Laxmi, the PE's starts to communicate with each other after  $\log_2(N/P)$  computations. See page 513, right column, Section II, "Radix-2 FFT Computation," which states: "1) Each PE computes  $N/2P$  butterflies per state until  $\log_2(N/P)$  stages." For a large size FFT, e.g., on the order of 8192 points, this communication among PE's results in considerable overhead for the overall calculation. Claim 1 recites, in part, computing each butterfly of the first " $\log_2 P$ " stages on either a single processing element or on each of the " $P$ " processing elements simultaneously. Accordingly, as recited in claim 1 the communications among the PEs happens only after  $\log_2(P)$  stages and only once for the rest of the FFT computation as evident from Figures 2 and 3 of the present application. For large size FFTs, this results in a lower communication overhead when compared to the approach of Laxmi.

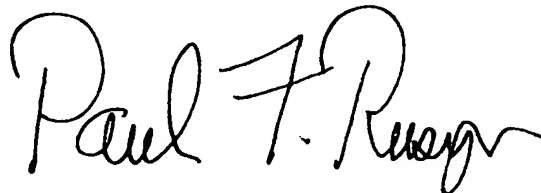
For these reasons, the combination of elements recited in claim 1 is allowable and the remaining independent claims are allowable for reasons similar to claim 1. All dependent claims are allowable for at least the same reasons as the associated independent claim and due to the additional limitations added by each of these dependent claims.

The present patent application is in condition for allowance. Favorable consideration and a Notice of Allowance are respectfully requested. **Should the Examiner not agree that all pending claims are allowable, the undersigned respectfully requests the Examiner to contact him at (425) 455-5575 to arrange for a telephone interview to discuss the outstanding issues.** If the need for any fee in addition to any fee paid with this response is found, for any reason or at any

point during the prosecution of this application, kindly consider this a petition therefore and charge any necessary fees to Deposit Account 07-1897.

Respectfully submitted,

GRAYBEAL JACKSON HALEY LLP

A handwritten signature in black ink, reading "Paul F. Rusyn". The signature is fluid and cursive, with the first name "Paul" and last name "Rusyn" being clearly legible, and the middle initial "F." written in a smaller, more compact script.

---

Paul F. Rusyn  
Registration No. 42,118  
155 – 108<sup>th</sup> Avenue NE, Suite 350  
Bellevue, WA 98004-5973  
(425) 455-5575 Phone  
(425) 455-5575 Fax